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Environmental Assessment
DOI-BLM-CO-S010-2014-0005

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Summit Reservoir Fuels Management Project

Montezuma County, CO
Township 36 N, Range 14W, Section 3

Project Proponent:
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BLM

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CHAPTER 1
INTRODUCTION AND NEED FOR THE PROPOSED ACTION

1.1 INTRODUCTION

This Summit Reservoir Fuels Management Project Environmental Assessment (EA) is an analysis of actions proposed for landscape scale treatments in an area previously treated, including 1)the Summit Ridge Hazardous Fuel Reduction Project, 2)the Cash Canyon, Summit Ridge, Aqueduct Hazardous Fuel Reduction Treatments Project, and 3) the Summit Ridge/Kernan Canyon Fuel Reduction Treatment Project. These projects were implemented between 2002 and 2006. These earlier projects were primarily mechanical mastication targeting pinyon/juniper vegetation types, although a small amount of ponderosa pine understory was also masticated within the proposed project area. Approximately 1,500 acres of mechanical treatment was implemented in these 3 previous projects. The Bureau of Land Management (BLM) proposes to treat additional fuels in adjacent areas that were not previously considered. The proposed treatment areas are all public lands which are surrounded by private and state lands. There are numerous homes and other structures immediately adjacent to these areas, including the Summit Reservoir Ranches Subdivision, the Summit Reservoir State Wildlife Area. See attached location map.

1.2 PURPOSE AND NEED FOR THE PROPOSED ACTION

BLM's purpose for this proposed action is to reduce the risk of high severity wild land fire to agency and private lands , as well as to improve the resistance to disturbance and the sustainability of ponderosa pine stands by treating fuels both mechanically and with prescribed fire within the identified units. More specifically, the BLM's purpose for treating the ponderosa pine forest community is to restore the fire regime condition class (FRCC) to historical values within the project area. Currently, vegetation and fuels in the area have missed several fire return intervals and are susceptible to uncharacteristically large, high severity wild land fires. Most fuels in the area can be categorized as fire regime condition class two or three. This indicates that compared to historical conditions, vegetative conditions and natural disturbances have been altered to a degree that is abnormal for the area.

BLM's need for the action is in accordance with the Federal Land Policy and Management Act (FLPMA) of 1976 which requires BLM to manage the multiple-uses of the public lands, including fuels, wildland fire, wildlife and natural values, and rangeland health without permanent impairment. Additionally, the project is intended to be in conformance with the goals and objectives of the San Juan/San Miguel Resource Management Plan (RMP, September 5, 1985, amended 1991), and be consistent with the Montezuma County Community Wildfire Protection Plan (CWPP, 2011).

The initial mechanical treatments (2002-2006) in this area met objectives of modifying canopy overstory and reducing FRCC adjacent to much of the private land and improvements. The

majority of BLM lands in the area have been treated or are being considered for treatment under this proposal.

1.3 CONFORMANCE WITH BLM LAND USE PLAN(S)

The proposed action is in conformance with the San Juan/San Miguel Resource Management Plan (RMP), approved September 5, 1985, amended (1991). The proposed action is consistent with the terms and goals of the following: livestock grazing management (page 5-6), timber management (page 21-22), and managing habitats to provide forage for wildlife (page 12).

General guidance within the RMP with regard to fire management states, "Provide level of protection from wildfire that will result in least total cost and generally enhance range management values. Use prescribed fire to enhance forage production" (page 28). The RMP also states, "Provide a level of protection from wildfire that will result in a least total cost and will enhance forest resources. Use prescribed fire when possible to enhance forest management objectives" (page 54). A Red book amendment to this RMP was issued in 1997 authorizing the use of prescribed fire.

1.4 RELATIONSHIPS TO STATUTES, REGULATIONS AND OTHER PLANS

- Federal Land Policy and Management Act of 1976 (43 USC 1701 et seq.)
- Healthy Forests Restoration Act of 2003 (16 USC 6501 et seq.)
- Sikes act of 1960 (16 USC sec. 670a)
- Clean Air Act of 1977 (USC 7401 et seq.)
- Colorado Department of Public Health and Environment Air Quality Control Commission Regulation No. 1
- Archaeological Resource Protection Act of 1974
- American Indian Religious Freedom Act of 1978
- National Historical Preservation Act of 1966 as Amended
- National Environmental Policy Act of 1969, as amended (42 USC 4321 et seq.)
- 1973 Endangered Species Act, as amended
- Migratory Bird Treaty Act of 1918 (16 USC 703711)
- Bald and Golden Eagle Protection Act (1962)
- Standards for Public Land Health: In January 1997, Colorado Bureau of Land Management (BLM) approved the Standards for Public Land Health. Standards describe conditions needed to sustain public land health and relate to all uses of the public lands.

The 1999 U.S. General Accounting Office (GAO) report, Western National Forests: A Cohesive Strategy Needed to Address Catastrophic Wildland Fire Threats concludes, "The most extensive and serious problem related to health of the nation forests in the interior west is the over-accumulation of vegetation."

The National Strategy: The Final Phase in the Development of the National Cohesive Wildland Fire Management Strategy (April, 2014), approved by the Secretary of the Interior and the Secretary of Agriculture states in Chapter 3:

"Many programs that strive to reduce losses to homes and communities from wildfires focus on the immediate vicinity of the home or the surrounding community. Research suggests that the public also is increasingly concerned with the overall environmental health of the land, with fire representing one influencing and important factor. Reducing the likelihood that a wildfire burning in adjoining vegetation will ignite homes or other structures is one of the more effective avenues to reducing losses."

1.5 IDENTIFICATION OF ISSUES

The proposed action was internally scoped with the Tres Rios Field Office Interdisciplinary Team on May 28, 2014.

In addition, an interested public scoping letter describing the project proposal was mailed to over 200 interested publics on July 21, 2014. The letter was sent to groups or individuals who have expressed an interest in participating in habitat improvement and hazardous fuels reduction projects as well as State and Federal wildlife agencies, tribes, and homeowners within one mile of the proposed action. Eleven responses were received during scoping, and no substantive comments were received. The project proposal was also posted on the Tres Rios NEPA website on November 11, 2013. The following issues were identified (see Interdisciplinary Team Checklist, Administrative Record for complete list of resources considered). The detailed analysis of these issues can be found in Chapters 3 and 4.

Air Quality

- The proposed action has the potential to impact residences, highways, and other receptors with smoke.

Vegetation

- The proposed action has the potential to alter existing vegetation communities within the project area.

Fuels/Fire Management

- The proposed action has the potential to impact public safety and fire suppression within and adjacent to the project are.

Cultural Resources

- Cultural resources have the potential to be impacted by the proposed action. The operation of mechanical mastication/mulching equipment such as hydromowers and roller choppers within site boundaries could potentially damage or destroy site features.

1.6 ISSUES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

Wildlife

- Migratory birds that inhabit ponderosa pine, oak brush, pinyon juniper and cottonwood during the breeding season could be temporarily impacted by the proposed action; however with design features in section 2.3 there will be no effect.
- Bald eagles and other raptor species could temporarily be impacted; however with design features in section 2.3 there will be no effect.

- There is a historic Great Blue Heron nest colony in the project area; however with design features in section 2.3 there will be no effect.

Threatened, Endangered, and Sensitive Plant and Animal Species

- Since there is no habitat for any TE&S plant or animal species in the project area, there would be no effect.

Fish Habitat

- There is no fish habitat in the proposed project area that would be affected by the action.

Recreation

- Big game hunters could be temporarily displaced by the proposed action; however with design features of the proposed action there will be no effect.

Visual Resources

- While temporary impacts could occur from the proposed action, there will be no effect with design features.

Wastes, Hazardous and Solid

- There is no hazardous or solid waste present and none would be introduced as part of the action.

Water Quality, drinking, ground

- No water quality would be affected by the proposed action.

Wild and Scenic Rivers

- There are no Wild and Scenic Rivers present in the project area.

Wilderness

- Wilderness is not present in the project area.

Environmental Justice

- No minority or low-income groups would be disproportionately affected by health or environmental effects.

Floodplains

- Resource not present

Wetland-Riparian Zones

- There would be no effect to riparian zones because the proposed action avoids any actions within riparian or wetland zones.

CHAPTER 2
DESCRIPTION OF ALTERNATIVES

2.1 INTRODUCTION

This EA focuses only on the Proposed Action and the No Action Alternative. No other actions were considered due to the extensive amount of fuels treatment that has already been completed in the area.

The No Action Alternative is considered and analyzed to help provide a baseline for comparison of the impacts of the Proposed Action.

2.2 PROPOSED ACTION

The BLM is proposing to treat vegetation within a project area of 250 acres; within three treatment units totaling 137 acres (see Figure attached). Treatment methods would include prescribed fire (both broadcast and pile), and mechanical thinning (to include hand thinning, and mastication). Hand thinning activities would generate firewood for public use which would be hauled to the edge of the project area along existing roads for public use. Prescribed fire would require construction of approximately 2 miles of control line prior to implementation. Riparian vegetation and cottonwood trees exist along the shoreline of Summit Reservoir; neither would be impacted by any activities of this proposed action.

Mastication and hand thinning would be performed on small diameter pine, juniper, and shrub understory to reduce the continuity of ladder fuels and crown spacing, as well as to maintain or create multiple age classes of ponderosa pine and understory. Mechanical thinning of the treatment units would be in a manner to meet a silvicultural prescription of approximately 60ft^2/acre of basal area of ponderosa pine, favoring a clumpy distribution of multiple age classes and larger diameter individual trees. A shaded fuel break would be created under this alternative along the BLM and private/state boundaries by removing most understory vegetation within a ten to fifteen foot wide area while maintaining the majority of the pine overstory. Rocky Mountain Juniper species within the project area would be targeted for removal through hand thinning or mastication due to the hazardous ladder fuel issues they pose during prescribed fire implementation under mature ponderosa pine.

Prescribed fire (either broadcast or pile) would occur under this alternative to keep surface fuel accumulations light, reduce canopy closure, increase stand resilience to fire, and reduce slash generated by mechanical treatments. All units would be put on a maintenance rotation of six to ten years for repeat prescribed fire in order to maintain stand health and forest structure.

Implementation of this alternative would occur in different times of the year, depending on the treatment. Pile burning would be accomplished when at least two inches of snow is on the ground, typically between mid-December and mid-March. Broadcast prescribed fire would be accomplished when environmental and fuel parameters are within prescriptive ranges, typically between early April and late October. Preparation of hand or ATV drag line would be accomplished within the same timeframe. Mechanical thinning would occur at times of the year when minimal soil damage would occur from machinery, typically from early April to mid-December, as determined by local weather conditions and crew availability.

A burn plan would be developed and approved by the Field Office Manager prior to implementation of any broadcast burning. A smoke permit would be obtained from the State of Colorado, Air Pollution Control Division; the smoke permit would identify standards and conditions under which the burn could be implemented.

2.3 DESIGN FEATURES OF THE PROPOSED ACTION

Air Quality

- The Burn Boss would consider smoke effects to public safety, including roads, airports, health care facilities, and schools, in addition to Class I airsheds.

- The Burn Boss would consider effects to viewsheds, particularly if effects could occur over multiple consecutive days.
- A smoke permit would be obtained from the State of Colorado, Air Pollution Control Division; the smoke permit would identify standards and conditions under which the burn could be implemented.

Noxious Weeds

- Treatment areas would be inventoried for noxious weeds prior to treatment. If noxious weeds are present weed treatment may occur prior to fuels treatment activities and in subsequent years as needed based on treatment effectiveness monitoring.
- In areas where noxious weed control measures are completed, effectiveness monitoring by BLM weed specialists would occur following treatments.
- In areas where noxious weed populations were not present at the time of the prescribed fire treatments, monitoring would be completed during the growing season following the treatment to ensure that no new populations of noxious weeds become established.
- Areas of ground disturbance associated with control lines would be re-habilitated and seeded if necessary following completion of treatment activities.

Recreation

- Treatment units would be designed to minimize visual contrasts and mimic natural processes.
- Along BLM/State/private boundaries, shaded fuel breaks would have scalloped edges and avoid straight lines where practicable.
- Control lines would be restored to a natural appearance in areas within view of roads, trails, or residential home sites. Rehabilitation work would be accomplished within 3 years of completion of project.
- Design of thinning units should avoid visual uniformity as viewed from roads, trails and residential home sites.
- In sensitive foreground areas (as viewed from roads, trails and/or residential home sites), unit boundaries and tree marking should be accomplished with temporary flagging and would be removed once need is fulfilled.
- As early as practicable prior to treatments during the fall hunting season, notices and maps of affected areas would be posted to provide hunters with advance notice of planned treatments

Wildlife

Migratory Birds

- In order to minimize take of migratory birds no vegetation removal would be allowed (mechanical or prescribed fire) May 1 through July 15 for treatments over 100 acres in

size. BLM policy established through BLM IM 2008-050 and BLM MOU WO-230-2010-04 states the BLM will take measures to minimize take of migratory birds.

Eagles and raptors

- No surface disturbing activity would occur from February 1 through July 31, annually, prior to a raptor nest occupancy survey for the current breeding season.
- If a raptor nest is identified, a species specific buffer would be put in place for the breeding season.
- If raptor nest is identified, the nest tree would be excluded from vegetation removal.
- If a raptor nest or roost site is discovered within the project area at any time, a BLM wildlife biologist would be contacted immediately and notified of the location.

Great Blue Heron

- No surface disturbing activity would occur prior to a great blue heron breeding survey to protect nesting great blue herons.
- If a heron nest, colony or roost is identified, a ¼ mile no action buffer would be put in place from March 15 – July 31.
- If a heron nest, colony or roost is identified, the tree would be excluded from vegetation removal.
- If a heron nest, colony or roost site is discovered within the project area at any time, a BLM wildlife biologist would be contacted immediately and notified of the location.

Cultural Resources

- If cultural materials are found, the field office archaeologist would be notified immediately and any ground disturbing activities would cease until further direction is given by the archaeologist.
- In order to avoid impacts to surface sites, any machinery would not operate in wet conditions that would produce ruts of over 3" deep or 10 feet long.
- Any skid trails created by the proposed action would be rehabilitated after treatment is completed, to include pulling berms in and reseeding as necessary.

Fuels and Fire Management

- During implementation of prescribed fire activities, the burn boss or appointee would monitor weather, smoke, fire behavior, and first order fire effects to ensure that objectives are being met.

2.4 NO ACTION ALTERNATIVE

Under the No Action Alternative there would be no pile or broadcast burning, no mechanical thinning, and no construction of control lines.

CHAPTER 3
AFFECTED ENVIRONMENT

3.1 INTRODUCTION AND GENERAL SETTING

This chapter presents the potentially affected existing environment (i.e., the physical, biological, social, and economic values and resources) of the affected area as identified in the Interdisciplinary Team Checklist found in Appendix A and presented in Chapter 1 of this assessment. Only those elements that are present and potentially affected are described and brought forth for detailed analysis. This chapter provides the baseline for comparison of effects described in Chapter 4.

The 250 acre project area is located around the south half of Summit Reservoir, approximately 7 miles northwest of Mancos, Colorado, and 8 miles southeast of Dolores, Colorado, entirely on BLM administered land. Summit Reservoir at full pool covers 103 acres of the project area. Elevation is 7,400', and the project area is on a flat aspect. Vegetation consists of ponderosa pine overstory with Gambel oak understory, with minor amounts of bitterbrush and serviceberry. Riparian vegetation and cottonwood trees surround the lakeshore. The proposed project is located within three sixth level watersheds; Simon Draw, East Fork Mud Creek (both of eventually flow into the San Juan River through McElmo Creek and the Mancos River, respectively), and Lower Lost Canyon Creek (which flows into the Dolores River).

Uses of the area include fishing and hiking in the Summit Reservoir State Wildlife Area and adjacent BLM.

3.2 Air Quality

Air quality in the project area is generally very good throughout the year with a few exceptions. Between the months of March and May, haboobs (dust storms) can occur during dry winters before and during frontal passages. Visibility during storms can be reduced to less than one mile at times.

During early summer, strong subsidence inversions affect the area. Particulate matter from local point emissions, as well as from coal fired power plants in New Mexico are trapped in a relatively stagnant atmosphere, reducing visibility for days or weeks at a time.

Additionally, wildfires from the four corners states and occasionally from as far away as the Pacific coast can produce smoke which drifts into the Montezuma Valley, reducing visibility and air quality.

Immediately adjacent to the project area are over 300 residences in two miles surrounding the proposed action, known as the Summit Ridge area. The town of Dolores is 7.5 miles northwest of the project area, has a population of approximately 800, and it contains one healthcare facility as well as two elderly residence homes. The town of Mancos is 6.5 miles southeast of the project area, has a population of approximately 1,300, and it has one elderly residence home. The nearest airport is Cortez (KCEZ), 15 miles southwest of the project area.

3.3 Vegetation

Vegetation in the project area is ponderosa pine with an understory of Gambel oak, serviceberry, grasses, forbs, and assorted other shrubs in minor components. Within the understory of the ponderosa pine, Rocky Mountain Juniper is a minor component. The southern end of the project

area was masticated in 2006. In the untreated areas, the understory is from 5-12' tall. Within the previously treated area, the understory is 2-4' tall.

Around Summit Reservoir, mature Cottonwood trees, willow species, and other riparian vegetation occur within an area from 50-100' from the reservoir's high water mark.

3.3.1 Noxious/Invasive Weeds

Noxious weeds and other invasive vegetation species are aggressively competitive and can often out-compete native vegetation, especially on recently disturbed sites. A "noxious weed" is usually a non-native plant that has been designated by Federal or State law as generally possessing one or more of the following characteristics: aggressive and difficult to manage; parasitic; a carrier or host of serious insects or disease; or non-native, new or not common to the United States. "Invasive vegetation", as defined by Executive Order 13112, is defined as "non-native plants whose introduction does, or is likely to, cause economic or environmental harm to human health."

Currently there has been very little noxious/invasive weed inventory that has been conducted within the project area. Although, the limited inventory that does exist documents small infestations of cheatgrass (*Bromus tectorum*) occurring in portions of the project area.

Although there has been little inventory conducted to date within the proposed project area it is very likely that other noxious weed infestations may occur because this area is directly adjacent to private land as well as previous mechanical fuel treatments on BLM.

3.4 Fuels and Fire Management

From 2002-2013, there were 60 fires on BLM, state, and private land within 5 miles of the project area. These fires burned a combined 181.9 acres of land. Thirty three of these fires originated on BLM, with the remainder occurring on either state or private land. The largest of these was the 171 acre Cash Canyon fire in 2005, which began on private land and rapidly spread to BLM. The Cash Canyon fire was slowed by previous fuels treatments in the area, which allowed fire managers to safely contain and control the incident with no structures lost in a heavy wildland urban interface environment.

From 2001 to the present, there have been 2,433 acres of mechanical fuels reduction on the 12,676 acres of BLM administered land within five miles of the project area. Approximately 19% of the BLM land within 5 miles of the project area has been previously mechanically treated. Most of these mechanical treatments were focused on Pinyon/Juniper woodlands, which were masticated to reduce canopy cover and the likelihood of high intensity fire in the WUI. No prescribed fire has occurred in this area on BLM land. All previous fuels treatments barring a small amount within the project area were focused on reducing the threat of high intensity wildfire in fire regime IV (high severity, canopy replacing, 100-200 year fire return intervals). The proposed action is within fire regime I (low severity, surface fire, 6-10 year fire return intervals). The project area has missed upwards of ten fire return intervals, meaning that fire has been absent as a disturbance agent for upwards of 100 years.

Other fires in Montezuma County in similar WUI environments have occurred in the past, most notably the 2012 Weber Fire (10, 143 acres), the 2012 Roatcap Fire (320 acres), and the 2011 Ponds Fire (18 acres). Additionally, in 2012, a fire burned from State onto BLM land within the project area before being controlled at 1.5 acres.

3.5 Cultural Resources

There is evidence of occupation of the analysis area from approximately 10,000 years ago to the present. Cultural resources associated with PaleoIndian, archaic, formative, protohistoric, and historic use of the analysis area are present. Prehistoric resources in the area typically consist of artifact scatters representing lithic reduction and tool manufacture related to short term hunting forays and animal and vegetal processing. Many of the sites lack diagnostic artifacts, and are classified as unknown prehistoric. A majority of the dateable prehistoric resources are associated with the archaic period, and to a lesser degree, the formative period. Historic era resources are generally related to mineral exploration, homesteading, and ranching activities. More detailed summaries of regional prehistory and history can be found in Colorado Prehistory: A Context for the Southern Colorado River Basin (Lipe and Pitblado 1999); Colorado Prehistory: A Contrext for the Northern Colorado River Basin (Reed and Metcalf 1999); Colorado History: A Context for Historical Archaeology (Church 2007).

A review of the existing BLM and Colorado Office of Archaeology and Historic Preservation records was conducted to identify previous archaeological surveys and known cultural resources within the analysis area. Five cultural resource inventories have been previously conducted within the proposed treatment units, resulting in a total of approximately 250 acres of survey. The most recent survey was conducted in 2001 by Western Archaeological Services (Harden 2003). This survey covered the entire proposed treatment area and was used for the current analysis. A very low site density was predicted in 2001 due to the abundance of shale soils with poor agricultural potential. Four isolated finds were recorded by Harden in the current project area, and these four sites are not eligible for the National Register of Historic Places (NRHP).

CHAPTER 4
ENVIRONMENTAL EFFECTS

4.0 DIRECT AND INDIRECT EFFECTS

4.1 PROPOSED ACTION

This section analyzes the effects of the proposed action to those potentially effected resources described in the ‘Affected Environment’, Chapter 3, above.

4.1.1 Air Quality

Prescribed burning would occur in the winter for pile burning, and either the spring or late fall for broadcast burning. Burning would occur for one to two days at a time, which would be repeated every 6-10 years. The burn must comply with The Clean Air Act as amended in 1990(42 USC 7401 et seq.) and Colorado Air Quality Control Commission Regulation No. 9 (5 CCR 1001-11). To comply with these laws, the BLM is required to obtain a Smoke Permit from the State of Colorado, Environmental Health Department, Air Pollution Control Division, prior to burning. The permit contains ‘standards and conditions’ under which the prescribed burn must be carried out in order to minimize the potential for violations of the National Ambient Air

Quality Standards (NAAQS). Typical standards include a maximum daily burn acreage, specified wind directions, specified smoke dispersal categories (ranging from poor to excellent, calculated in knot feet), and a daily ignition end time. In addition, the Burn Boss must also consider smoke effects on public safety, including roads, airports, healthcare facilities, and schools, as well as potential impacts to Class I airsheds (National Parks, Wilderness Areas). The burn boss should also consider effects to viewsheds, particularly if effects could occur over multiple consecutive days.

Violations of NAAQS are assumed not to occur under the smoke permit standards and conditions.

Daytime smoke produced by prescribed fire would likely move north to west based on the anticipated wind directions in the smoke permit. Within 2 miles, daytime smoke would move over National Forest Service land and then dissipate. Directly adjacent to the burn units, numerous residences exist, which would require aggressive public outreach prior to ignition. Highway 184 is to the north and west of the project area; the burn boss may need to appoint a smoke monitor to advise of adverse impacts on the highway. In the event that smoke impairs the highway, Colorado State Patrol must be informed of the potential hazard and coordinated with to ensure public safety. The potential to impact either Mancos or Dolores with daytime smoke is extremely limited given their distance from the project area and the anticipated wind directions on the smoke permit. Daytime smoke would be visible from Mesa Verde National Park, but would not impact it with the anticipated wind directions.

Night time smoke could potentially impact several residences in the immediate project area. In some cases, night time inversions can set up and trap smoke in low lying valleys. The project area sits on a ridge through which numerous small drainages would pull smoke south towards Cedar Mesa Ranches subdivision and Mesa Verde National Park entrance. US Highway 160 is 5 miles south of the project area. These areas are far enough from the project area that the most significant impact should be the smell of smoke in the air in the evening, but the worst case scenario needs to be taken into account during burn plan preparation. The burn boss must take these potential smoke impacts into consideration, and should complete prescribed fire activities relatively early in the afternoon to allow the majority of the smoke generated from the prescribed fire to dissipate prior to evening. Additionally, “Smoke on Road” or other similar warning signs should be placed on Highway 184 during the day time, and on Highway 160 at night time as warranted. Patrols may be necessary throughout the night to monitor smoke impacts on Highway 160.

The proposed action would produce a small amount of dust when implemented; however, these effects should be negligible on overall air quality in the area.

4.1.2 Vegetation

Short term effects to vegetation stemming from the proposed action would include the creation of a mosaic of different age classes of mountain shrub species, and increase of forbs and grasses in the treatment units. Debris generated by mastication would create new microsites for seeding of grasses and forbs.

Mountain shrub species resprout vigorously following disturbance; sprouts would rapidly propagate from root collars following disturbance to create multiple age classes within the understory.

Thinning ponderosa pine under 14" would result in a multitude of age classes in a scattered distribution, retaining old growth individuals in an open setting while allowing some younger pines to exist in clumps. This is likely the distribution that would have been encountered before European settlement of the area. Reduction of canopy cover of ponderosa pine would also lead to increased health of the stand due to less competition.

Removal of coniferous ladder fuels would occur either mechanically or by prescribed fire. The presence of these species in the understory indicates the lack of fire from the site over the past century, as frequent surface fires would have removed these species when they were still seedlings. By removing these trees, the dominant ponderosa pine overstory would likely be maintained in the event of a wildland fire, or during prescribed fire activities.

4.1.2.1 Noxious/Invasive Weeds

The proposed action alternative proposes to actively treat 137 acres within the project area using both mechanical methods, pile burning, and low to moderate intensity prescribed burns. Prior to conducting the prescribed fire activities site preparation would consist of constructing approximately 2 miles of hand line and/or ATV plow lines for helping to control prescribed fire.

The amount of soil disturbance, temporary loss of existing vegetation and the amount of bare ground exposed would be widespread with the use of prescribed fire. Soil disturbing activities associated with the construction of fire control lines would result in the exposure of bare mineral soil. Ground disturbing activities associated with both mastication and hand thinning would be minimal to non-existent.

Regardless of the activity implemented, those areas in which ground disturbance has occurred, vegetation cover has been removed and/or bare soil exposed are susceptible to the spread and establishment of noxious weed species.

Although the proposed action has the potential to increase and spread noxious weeds within the proposed project area, the design criteria identified as part of the proposed action partially negate these effects. Design criteria include mitigations that 1) treatment areas would be inventoried where possible for noxious weeds prior to treatment. If noxious weeds are present then noxious weed treatment may occur prior to treatment activities and in subsequent years as needed based on treatment effectiveness monitoring; 2) in areas where noxious weed control measures are completed, effectiveness monitoring would occur following treatments; 3) in areas where noxious weed populations were not present at the time of the prescribed fire treatments, periodic monitoring would be completed during the growing season following the treatment to ensure that no new populations of noxious weeds become established, and 4) areas of ground disturbance associated with fire control lines would be re-habilitated and seeded if necessary following completion of treatment activities.

4.1.3 Fuels and Fire Management

Mastication or hand thinning followed by either broadcast or pile burning would be performed small diameter (<14") ponderosa pine, juniper, pinyon, and mountain shrub vegetation to reduce the continuity of vertical fuels, remove ladder fuels from dominant overstory, and increase stand resiliency to wildland fire.

Directly following mechanical reduction, vertical continuity of fuels would be disrupted, limiting the spread of wildland fire with flame lengths over 4'. However, mastication would increase

surface fuel loadings, meaning that fire would still be able to spread throughout the units. Typical fire behavior in mastication debris is relatively low intensity surface fire (1-2' flame lengths) with a slow rate of spread (ROS, 1 chain/hour). Mastication debris would be consumed up to about 50% with each entry of broadcast prescribed fire. Mountain shrub species would vigorously resprout after mechanical treatment. Average sprout height 2 years post treatment is 18".

Slash generated by hand thinning of coniferous species would be piled and burned. The net effect on fire behavior in the units will be a significantly lower fire intensity combined with reduced horizontal and vertical fuel continuity, which will limit fire's ability to spread throughout the units. Canopy closure and ladder fuel concentrations would be reduced, leading to less probability of torching and spotting in a wildland fire scenario. Invasive and noxious weeds may be more likely to occur in pile burn scars, however with design features of the proposed alternative, these effects should be minimized.

After treatment, the units proposed for treatment would exhibit low flame lengths, low rates of spread, and increased chances of success in initial attack. Fires generating on BLM in the project area would be easier to control, and pose less of a risk to the adjacent housing and developments on private land.

4.1.4 Cultural Resources

Significant impacts to cultural resources are actions that would adversely affect sites that are eligible or potentially eligible for the National Register of Historic Places (NRHP). A significant impact would affect the integrity or qualities of a site to a degree where the site is no longer eligible or potentially eligible for the NRHP. Although no sites were found in the proposed project area that meet the requirements for inclusion on the NRHP, there is still a possibility that buried sites are present.

The operation of mechanical mastication/mulching equipment such as hydromowers and roller choppers within site boundaries can damage or destroy site features, such as architectural remains. The tires and tracks of these types of equipment can dig into the ground surface, especially in wet conditions, displacing artifacts and features such as hearths and disturbing the research potential of sites. Ground disturbance associated with roller chopping has the potential to increase soil erosion in the vicinity of sites over time, if not followed with seeding. The resulting mulch from hydromowing can help stabilize soils, but it also masks the site surface, thus limiting future site condition assessment efforts and site management.

Mechanical thinning via conventional logging equipment can be ground disturbing, and can destroy site features and disturb buried cultural deposits. The tires and tracks of the associated equipment, such as feller bunchers, forwarders and skidders, can have similar impacts on sites as mechanical mastication/mulching equipment. Log skidding can reduce or destroy site integrity. The skid trails from log skidding could change the erosional gradient or drainage patterns around nearby sites, resulting in soil destabilization, if not followed with ripping and seeding.

Prescribed fire can damage or destroy fire sensitive features such as wooden site components and interfere with chronometric data that could be present in a feature such as a hearth. Burning may leave some areas in the treatment units more vulnerable to erosion. The design features in this EA that serve to minimize impacts to soil and vegetation resources would likely minimize potential future increases in erosion in sites. The proposed action could also benefit cultural

resources as it should reduce the chances of severe wildfire occurring within the boundaries of significant sites within the proposed treatment units.

Control line construction can impact site features and disturb buried cultural deposits that have not been discovered. Hand thinning within site boundaries would not typically have an adverse effect on sites without architecture, and could reduce the risk of severe wildfire within sites, as long as the resulting slash is removed from within site boundaries. The higher temperatures and heat concentration associated with the burning of slash piles can damage artifacts or features or destroy combustible components of sites. Hauling and/or skidding hand thinned material from within site boundaries could adversely affect most site types. If buried cultural sites are discovered during the implementation of this project, flagging tape would be placed along the boundaries of site avoidance areas.

These consequences have the potential to adversely impact buried cultural deposits. Motorized travel within a site, especially in wet ground conditions, can result in rutting which can disturb buried cultural deposits. User created roads and more intensive livestock and wildlife grazing and congregation can lead to or increase erosion in sites. Motorized use can result in an increase in site looting and vandalism. Livestock grazing in sites can result in the trampling, displacement, and destruction of site artifacts and features. If buried cultural deposits are discovered during the implementation of this project, a further analysis would be conducted.

The BLM has determined that the proposed action would have no adverse effect on any significant sites. Consultation with the Colorado State Historic Preservation Officer (SHPO) will be completed before a decision on this proposal is made. Consultation with affiliated Native American tribes and pueblos regarding properties of traditional, religious and cultural importance will also be completed prior to a final decision.

4.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, there would be no direct, indirect, or cumulative effects from the proposed action. Under Alternative B, or the No Action Alternative, fuels and associated fire behavior within the project area would not be reduced in the foreseeable future. In the absence of a wildland fire event, fuels would continue to accumulate. In the presence of a wildland fire event, fuels would be susceptible to passive crown fire activity under conditions when the energy release component (ERC, the amount of available energy per area at the head of a fire) in the 58th percentile (≥61). Flame lengths would be between eight and thirty feet throughout the project area, necessitating an indirect control strategy. Rates of spread would be between 20-110 chains per hour. A high severity (>50% mortality of overstory) is likely under these conditions.

Adjacent housing and improvements would continue to be at high risk of loss from wildland fire due to the high fuel loading in the project area. Ponderosa pine stands in the project area are at a high risk for bark beetle attack. Stocking density in a majority of the proposed timber treatment areas is high, and future growth and vigor of pine stands would be compromised. The potential for the spread and establishment of noxious weeds within the proposed project area would still exist. The potential for spread would exist due to the fact that 1) noxious weeds are currently present within the project area as well as on adjacent public and private lands; 2) vectors for the spread of weeds will continue to exist such as un-improved roads and trails and recreational activities. All of these activities cause some level of ground disturbance which increases the

potential for weeds to establish.

4.3 CUMULATIVE EFFECTS

"Cumulative Effects" are those effects resulting from the incremental effect of an action when added to other past, present, or reasonably foreseeable actions regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time. The cumulative effects analysis considers the geographic scope of the cumulative effects and past, present, and reasonably foreseeable actions. Geographic scope may vary by resource and will be described within that cumulative impacts section for that specific resource if different than that described below.

For this project, the geographic scope of the cumulative effects area is defined as all BLM land north of highway 160, south of highway 184, and east of highway 145. The total area is 50,410 acres, of which 7,908 acres is administered by the BLM.

4.3.1 PAST ACTIONS

Past actions that affect the same components of the environment as the proposed action are: livestock grazing, hazardous fuels reduction, and recreational activities.

4.3.2 PRESENT ACTIONS

Present actions that affect the same components of the environment as the proposed action are: livestock grazing and recreational activities.

4.3.3 REASONABLY FORESEEABLE FUTURE ACTIONS

Livestock grazing would continue to occur on public and private land. BLM would continue to preclude or mitigate potential effects to grazing allotments through analysis of allotments. Recreational uses such as fishing, mountain biking, birding, and hiking would continue. Off-road motorized vehicle usage would likely continue in the area.

4.4 CUMULATIVE EFFECTS SUMMARY

4.4.1 Air Quality

Cumulative effects to air quality would be negligible due to the short term nature of air quality impacts generated from the proposed action. Following two to three days after prescribed fire, air quality in the area would return to baseline levels. Additionally, in winter many residents use wood heating in their homes; pile burning at this time would add a negligible amount of particulate matter to the air at a level well below NAAQS as indicated on the smoke permit.

4.4.2 Vegetation

When combined with previous mechanical treatments in the area on BLM, the proposed action would result in 4,761 total acres of vegetation treatments on 7,908 acres of BLM administered land (60%). The proposed action in combination with past actions in the cumulative effects area would improve vegetation composition, structure, and health over time.

4.4.2.1 Noxious/Invasive Weeds

It has been determined that cumulative effects would be negligible as a result of the proposed action or alternatives because the management and control of noxious weeds would occur as outlined in the design criteria incorporated in the proposed action alternative. There would be no cumulative effects associated with the no action alternative.

Furthermore, past, present and reasonably foreseeable future actions such as past vegetation treatment activities, increased recreation activities, and development would increase the potential for spread of noxious weeds. Subsequently, the potential spread of noxious weeds would be negated by implementation of the Tres Rios Field Office's invasive species action plan which centers around using an integrated weed management approach that focuses on early detection, prevention and implementation of appropriate control measures to include the use of chemical, mechanical and biological control agents for treating and controlling noxious weeds.

4.4.3 Fuels and Fire Management

Cumulative effects to fuels conditions would be an overall improvement through the multiple treatments that have occurred in the area over the past decade. Future fire management actions in the area would benefit from, and possibly contribute to this improvement. Specifically, future fire suppression actions in and adjacent to these treatments would be more effective due to less fuel continuity and loading, while future fire occurrence within the treatment areas would further contribute to restoration of a more natural fire regime, though this restoration impact would be limited in spatial extent by the high values in and adjacent to the area.

4.4.4 Cultural Resources

Cumulative effects should be negligible as a result of the proposed action because eligible and potentially eligible cultural resources were not found. There would be no cumulative impacts associated with the no action alternative.

CHAPTER 5
PERSONS, GROUPS, AND AGENCIES CONSULTED

An interested public scoping letter describing the project proposal was mailed to over 200 interested publics on July 21, 2014. The letter was sent to groups or individuals who have expressed an interest in participating in habitat improvement and hazardous fuels reduction projects as well as State and Federal wildlife agencies, tribes, and homeowners within one mile of the proposed action. Eleven responses were received during scoping, and no substantive comments were received. The project proposal was also posted on the Tres Rios NEPA website on November 11, 2013.

Table 5.2. List of Preparers

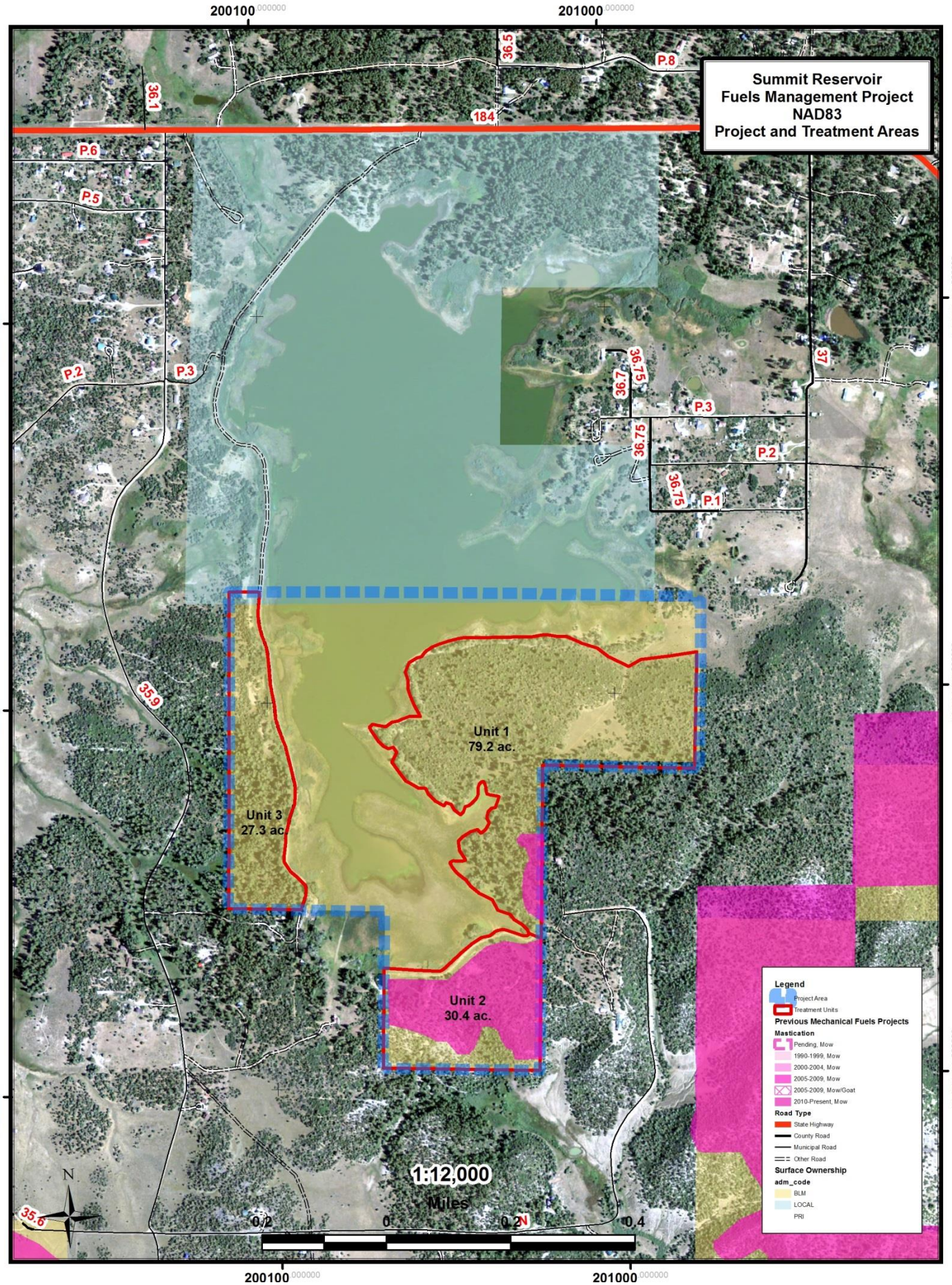
BLM Preparers

Name	Title	Responsible for the Following Section(s) of this Document
Brad Pietruszka	**Fire Management Specialist**	**IDT Lead, Primary Author, Air Quality, Vegetation, Fuels & Fire Effects Analysis**
Julie Bell	**Archaeologist**	**Cultural Resources Effects Analysis**
Michael Schmidt	**Wildlife Biologist**	**Wildlife Design Features**
Mike Jensen	**Rangeland Management Specialist**	**Noxious/Invasive Weeds Effects Analysis**
Gina Jones	**NEPA Coordinator**	**NEPA Compliance**

APPENDIX A: Glossary of Terms

Community Wildfire Protection Plan: A community based collaborative plan developed by local stakeholders that identifies and prioritizes ares for hazardous fuel reduction
Energy Release Component: A number related to the available energy (British Thermal Units) per unit area (square foot) within the flaming front at the head of a fire.
Fire Regime Condition Class: a classification of the amount of departure from the natural vegetative cover and fire regime, broken into three groups. FRCC 1 indicates a low departure from natural values. FRCC2 indicates a moderate departure from natural values. FRCC 3 indicates a high departure from natural values
Fire Regime: The general classification of the role fire would play across a landscape in the absence of modern human mechanical intervention, but including the influence of aboriginal burning
Hazardous Fuels: Wildland vegetation which, if ignited, threaten public safety, structures, facilities, cultural and natural resources, natural processes, or permit wildfires to spread across administrative boundaries
Ladder Fuels: A vegetative vertical path for fire to enter the canopies of overstory trees
Mastication: A mechanical fuels reduction technique that shreds targeted live and standing dead vegetation into small pieces and redistributes them as surface fuels
Mechanical Thinning: The process of removing vegetation with machinery
Noxious Weed: any plant designated by a Federal, State or county government as injurious to public health, agriculture, recreation, wildlife or property. A noxious weed is also commonly defined as a plant that grows out of place and is "competitive, persistent, and pernicious."
Prescribed Fire: fire that is intentionally applied in a skillful manner, under exacting weather conditions, in a designated place, to achieve specific results
Wildland Urban Interface: Areas where homes, transmission lines, communication sites, or other improvements are built near or among lands prone to wildland fire. Includes locations where unplanned wildland fire could threaten public safety

APPENDIX B: Project Map


Summit Reservoir
Fuels Management Project
NAD83
Project and Treatment Areas
200100 000000
201000 000000
4147000 000000
4146000 000000
4145000 000000
36.5
P.8
36.1
184
P.6
P.5
P.2
P.3
36.75
36.7
37
P.3
36.75
P.2
36.75
P.1
35.9
Unit 1
79.2 ac.
Unit 3
27.3 ac.
Unit 2
30.4 ac.
35.6
N
1:12,000
Miles
0.2
0
0.2
0.4
Legend
Project Area
Treatment Units
Previous Mechanical Fuels Projects
Mastication
Pending, Mow
1990-1999, Mow
2000-2004, Mow
2005-2009, Mow
2005-2009, Mow/Goat
2010-Present, Mow
Road Type
State Highway
County Road
Municipal Road
Other Road
Surface Ownership
adm_code
BLM
LOCAL
PRI